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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/761,676	01/21/2004	Jesse Raymond Black	TH2438 (US)	3142

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SHELL OIL COMPANY
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EXAMINER

ZUCKER, PAUL A

ART UNIT	PAPER NUMBER
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1621

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/02/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/761,676

Applicant(s)

BLACK ET AL.

Examiner

Paul A. Zucker

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-195 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 156-193 is/are allowed.
- 6) ☒ Claim(s) 1,2,194 and 195 is/are rejected.
- 7) ☒ Claim(s) 3-155 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/21/04, 6/7/04, 3/7/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. In response to Applicant's request, and upon further consideration, the Examiner hereby withdraws the restriction requirement set forth in the previous Office Action mailed 2 October 2006. All claims are hereby rejoined and fully examined for patentability as set forth below.

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 71 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 71 recites the limitation "AMS" in line 3. The limitation "AMS" has not been defined.

Claim Rejections - 35 USC § 102

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The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Nishida (US 5,304,684 04-1994). Nishida discloses (Column 1, line 61-column 2, line 42) a process for the oxidation of sec-butyl benzene to a mixture of methyl ethyl ketone (MEK) and phenol which corresponds to that instantly claimed. Nishida discloses (Column 1, lines 45-52) contacting liquid s-butylbenzene with an oxygen-containing gas at 90°C-150°C.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35

U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1, 2, 194 and 195 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishida (US 5,304,684 04-1994) in view of Yamamoto et al (JP 62-114922, English translation).

Instantly claimed is a process for the production of methyl ethyl ketone (MEK) and phenol from the oxidation of sec-butylbenzene in a continuous reactor. The co-production of acetone from the co-oxidation of cumene is also claimed.

Nishida teaches (Column 1, line 61-column 2, line 42) a process for the oxidation of sec-butyl benzene to a mixture of methyl ethyl ketone (MEK) and phenol which corresponds to that instantly claimed. Nishida teaches simply contacting the sec-butyl benzene with an oxygen-containing gas at 90°C-150°C. Nishida does not specify whether the contacting is performed under batch or continuous conditions in the reactor. The Examiner therefore presumes that both are encompassed.

The difference between the process taught by Nishida and that instantly claimed is that Nishida does not appear to contemplate the application of his process to a mixture of cumene and sec-butyl benzene while such application is instantly claimed.

Yamamoto, however, teaches (Translation, page 7, Application Example 1) the oxidation of a mixture of sec-butylbenzene and cumene. Yamamoto teaches (Translation, page 6, 5th full paragraph) oxidation of mixtures of cumene and sec-

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butylbenzene containing cumene in 30-70 wt % amount. Yamamoto teaches (Translation, page 6, 5th full paragraph) several advantage for the oxidation of sec-butyl benzene in the presence of cumene including the reduction of acetophenone as a by-product and increasing the oxidation rate of sec-butylbenzene.

Thus one of ordinary skill in the art would have been motivated to conduct the oxidation of sec-butylbenzene in the presence of cumene in order to reduce the amount of acetophenone as a by-product and increase the oxidation rate of sec-butylbenzene. There would have been a reasonable expectation for success because Yamamoto teaches these effects.

Thus the instantly claimed process would have been obvious to one of ordinary skill in the art.

Claim Objections

6. Claim 136 is objected to because of the following informalities: The word "of" in line 1 should be changed to the word "is". Appropriate correction is required.
7. Claims 3-155 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form, and to overcome all objections, including all of the limitations of the base claim and any intervening claims.

Allowable Subject Matter

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8. Claims 3-155 are drawn to allowable subject matter. Claims 156-193 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

The closest prior art, Nishida (US 5,304,684 04-1994) and Yamamoto et al (JP 62-114922, English translation), neither alone nor together, disclose or fairly suggest the instantly claimed process for the production of phenol, methyl ethyl ketone, acetone and mixtures thereof.

Conclusion


9. Claims 1-195 are pending. Claims 1, 2, 194 and 195 are rejected. Claims 3-155 are objected to. Claims 156-193 are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul A. Zucker whose telephone number is 571-272-0650. The examiner can normally be reached on Monday-Friday 5:30-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thurman K. Page can be reached on 571-272-0602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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